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Rail-Road News.

Railroad through the British Provinces of America.

This subject has been brought before the House of Lords, and was favorably looked upon by the Peers. Lord Monteagle presented a petition from New Brunswick, and stated that he believed the Secretary for the Colonies was desirous of giving every facility for the improvement of Railway communication in North America. Almost all those in authority in those colonies, and more particularly the military authorities, had recommended the construction of a military road between New Brunswick and Canada. In 1847 the necessity of making a railway communication from Halifax to Quebec was brought under the attention of the Government. Two officers of the Royal Engineers, Major Robinson and Captain Aitchen were employed to survey the ground, and on the perusal of their report the Colonial Secretary expressed his opinion as to the importance of establishing such a communication. Lord Stanley said a line of railroad from Halifax to Quebec would pass through three separate Provinces, in some respects differing from each other, yet all were anxious for the establishment of the line. They were willing to give a guarantee on the public fund, and a grant of land to the extent of 10 miles on either side of the railway, comprising about 5,000,000 acres; and all they asked was the countenance of the Home Government. Nova Scotia desired to construct her part at her own expense. The cost of the Nova Scotia part of the line would be £800,000, nearly $4,000,000. The revenue is £80,000 per year, and the surplus £40,000. It would take twenty years of the surplus to pay up this, and the money could be raised at 5 per cent., and at 3½, if Government took hold of it. 11,000,000 of acres of land would be pledged for the advances, and any amount of such security given.

Cumberland Mountain Tunnel

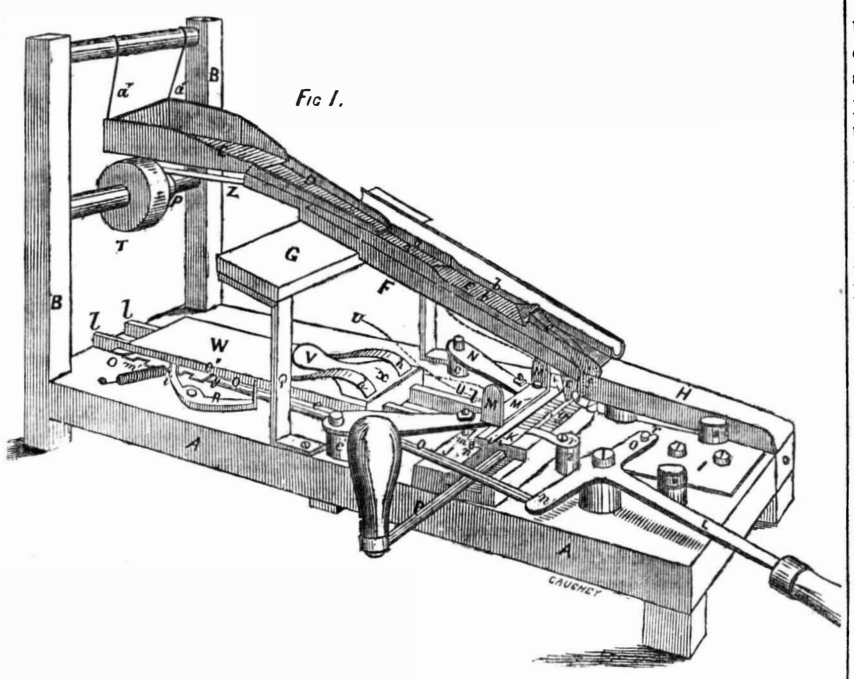
On the 22d ult., the citizens of Tennessee celebrated, with speeches, a sumptous dinner, and a ball at night, the completion of the great tunnel of the Cumberland mountain, on the Nashville and Chattanooga Railroad. Nearly seven hundred ladies and gentlemen participated in the festival, and passed through the tunnel, which is three thousand feet long, and one hundred and eighty-five feet from the top of the mountain.

The Blue Ridge Tunnel.

We see it stated that the work which was commenced at the eastern end of this tunnel, in October, has progressed ninety-four feet, and that the whole number of cubic yards excavated amounts to 942. On the west side total progress of the heading since August, when the work of excavation was begun, is 224 feet and the total nnmber of cubic yards excavated is 1,239.

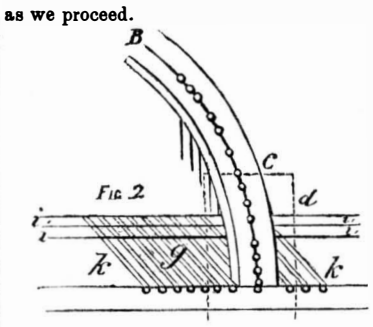
MACHINE FOR STICKING PINS INTO PAPER.

Fig 1.



This is one of the most ingenious machines in the world, and is something like its fellow, the Card Making Machine of Whittemore; it is the invention of Mr. Degrasse Fowler, of North Brunsford, New Haven Co., Conn., and is secured to him by letters patent.

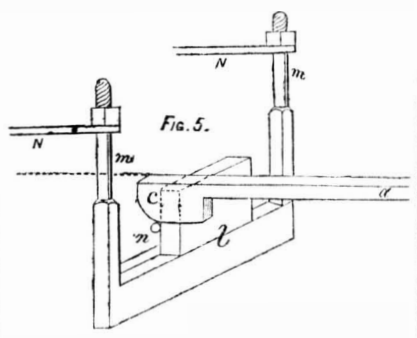
Figure 1 is a perspective view of the complete machine. Figure 2 is a section showing the curved part of the conductor, with a portion of a series of grooves. Figure 3 is a longitudinal section. Figure 4 is a section showing the manner in which the piece, *c*, fig. 3, passes over the pin, *n*, and is thrown back again under it. Figure 5 is a section showing the mode of drawing down the crumping bars into the grooves. We will refer to the figures as we proceed.



A A, fig. 1, is a platform; B B is a frame; C is a hopper suspended on the frame, with a spring, Z, to jolt it; D is a broad tapering trough; E E is a conductor; F F are two gutters; G is a small platform attached to two pieces, Q Q; H is an inclined plane with a perpendicular side; J is a metallic plate on which the plate K slides; this plate has a series of grooves, marked *q*. L is a lever with two arms, *n o*. M M M is the crumper; N is a spring to throw the crumper up; O is a rod to move the slide W; P is a rod to move the slide K; R is a lever with two arms working upon a centre pivot; *s* is an upright piece to support the fulcrum of lever L. T is a band pulley; U U, the dotted lines, show the position of the paper; V is a piece of metal kept down by the springs, *h h*, to hold the paper. The slide, W, runs the paper during the process of sticking.

In figure 2 *c* is the conductor; B the narrow slit in the centre through which the pins pass; K K is a plate with a series of grooves, *g*; *i i* are longitudinal grooves to confine the paper: this figure shows the pins.

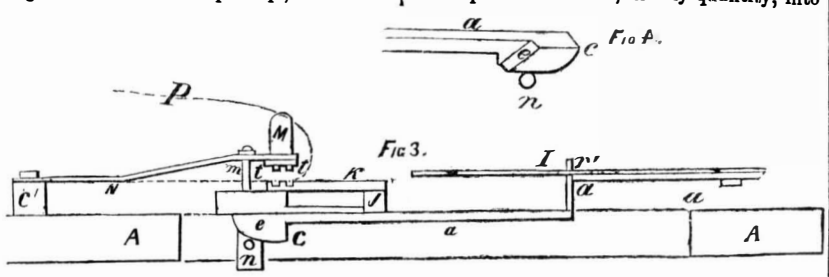
Figure 3 is a section of the platform; I is a metal plate; *r'* is a pin by which this plate is moved by the arm below; *a a a* are metal bars attached to the plate, I. C is the thick end of the bar made like a door latch-knob, *e*; *n* is a pin over which the latch passes to bring down the crumper; N is a spring to throw the



crumper up; M *t t* is the crumper; J is a plate on which the slide, K, moves. The dotted lines, P, show the position of the paper; *m* is a rod fastened to the spring, N, and the plate, *l*, fig. 5.

In fig. 4, *a* is a metal bar with a large end, *c*; *n* is a pin over which it passes; *e* is an inclined plane for the pin, *n*, to back over the piece, *c*. The figures 3, 4, and 5 should now be compared together.

The pins are thrown, in any quantity, into



the hopper, C, which gets a shaking motion by the spring, Z, from the piece, P, on the shaft of the pulley, T; the pins then slide gradually down and fall into the conductor, E E, at *a a*. When the pins fall into the channel, *a*, they roll to the centre, the body of the pins passes through slits, and they are suspended by their heads, as seen in section B, fig. 2. The conductor is sufficiently inclined to make the pins slide down and fall into the grooves, *q*, in the slide K, fig. 1. The conductor is stationary, the grooves, therefore, are filled by passing the said slide under the lower end of the conductor, by the rod with the handle, P. As more pins might fall into the channel of the conductor than would be sufficient to fill the slit, a portion of the said conductor is bevelled at *b b*, and the surplus pins slide over into the gutters, F, then upon an inclined plane, then into a receptacle from whence they are taken to the hopper again. To prevent the pins falling with their heads at irregular distances from the ends of the grooves, a flat upright plate, *f*, (dotted lines), the same as at *d*, fig. 2, is placed so as to have the heads of the pins strike it, and cause them to fall into the grooves correctly as they pass under the lower end of the conductor. When the slide, K, has its grooves filled, it is drawn back, and is arrested by the pin, *n'*. A thin piece of metal, *r r*, keeps the pins in the groove from being thrown out by the jarring of the machine. The pins are now ready to be stuck into the paper thus. Upon the slide, W, is the metal plate, V, the end at *x* being as broad as the slides. The other end is bent upwards, so that when pressed down by the thumb, the end at *x* rises. The sheet of paper to be filled with pins is placed under this broad end. The springs, *h h*, pressing upon the broad end of V, hold the paper to the slide. The paper is then passed under the crumper, M', and then thrown over back as shown by the dotted lines, U U, (or dotted line, P, fig. 3.) The paper being thus made ready and the grooves filled with pins, the lever, L, is moved by the handle, and by this movement the plate J, is carried towards the pins in the grooves, and the crumper is operated as follows:—when the said plate is moved forward by the lever, the bar, *a a a*, fig. 3, which is attached to it, also moves, and its thick end, *c*, sliding under the plate, J J, passes over the pin, *n*, which, being attached to the piece, *l*, causes it to be drawn down a distance equal to the curve of the piece, *c*. To each end of *l*, as seen in fig. 5, are attached two perpendicular rods, *m m*, the upper ends of which are attached by a nut to the springs, N N, and near to the crumper, M. As *l* passes over the pin, *n*, fig. 3, by means of its rods, *m m*, it draws down the crumping bars, *t t*, into the longitudinal grooves in the slide, K, and thus the operation of crumping the paper is performed. Notches are made through the crumping bars, *t t*, in position to correspond with the groove in the slide, K, and large enough to allow the pins to pass easily through when closed into the longitudinal grooves. The paper, by the action of the bars and grooves, is raised into two folds at proper distances upon the sheet, and when the pins pass through the notches of the crumping bars they penetrate these folds. At the moment the crumper completes the operation, the plate, J, moved by the lever, L, strikes the heads of the pins in the grooves, and forces them through the folds in the paper. At this time the piece, *c*, fig. 3, passes over the pin, *n*, and the crumper is thrown up. When the bar, *a a*, is drawn back by reversing the motion of the lever, L, the piece, *n*, passes up the incline plane, fig. 4, and the piece, *c*, assumes its former position, as seen in fig. 3, and thus the operations of crumping the paper and sticking the pins are performed by a single motion of the lever, L.

The paper is moved by the slide, W, which has a rack, *e*, with teeth, *e'*, on it that is operated by the rod, O. When the lever, L, is moved, the rod, O, is drawn forward, and

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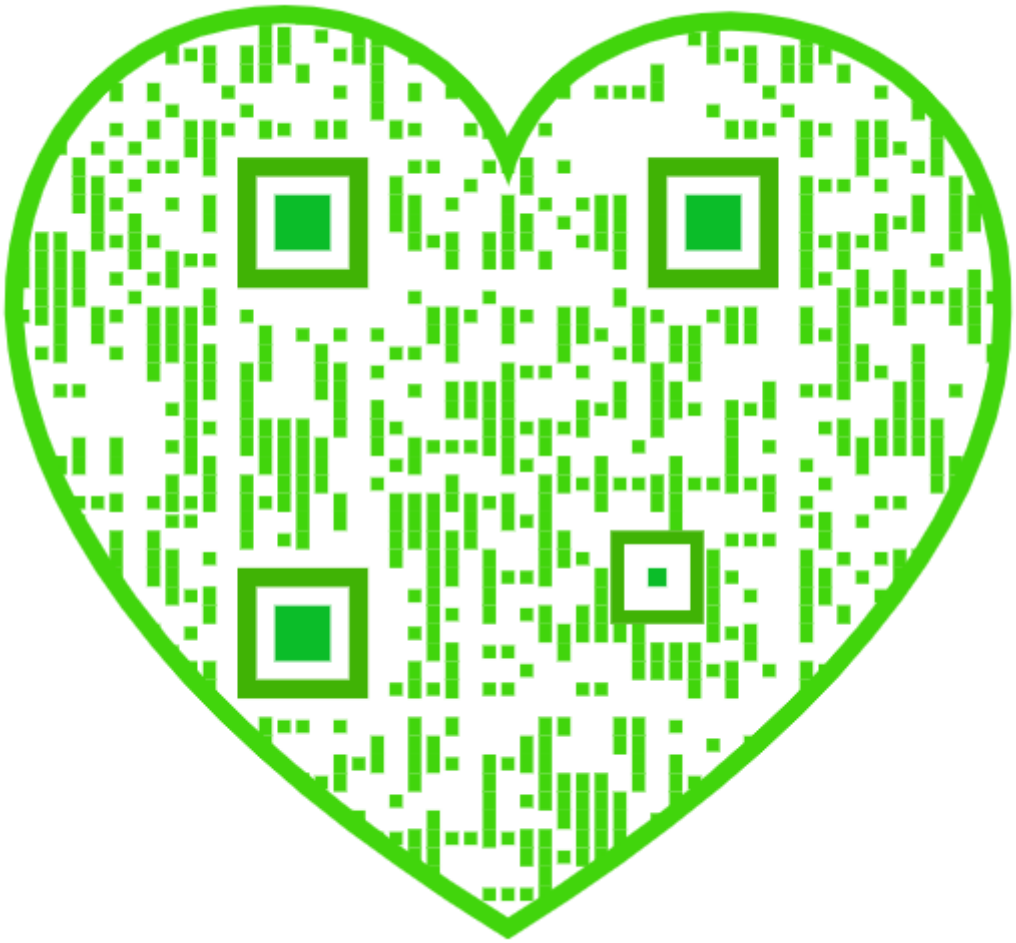

when the plate, J, has driven the pins into the paper, the flattened end of the rod, O, falls in front of one of the teeth, *e'*. After the pins are stuck and the lever, L, drawn back, the rod, O, operating on the ratchet, moves the slide, W, back a given distance. This operation is repeated till the rod, O, traverses the whole length of the rack, at the end of which is a bevelled piece of metal which throws it above the rack, and against the side of the slide, W. The slide is then moved forward on rails, and another sheet of paper is inserted. When the slide has reached the desired point forward, the point of the rod, O, strikes a lever, O', at the end of the rack, and is again thrown into its place in the rack; it is kept in the rack by one end of the lever, R, which is made to press against it by the spiral spring, *m*, attached to the other end of the lever. The end of this lever prevents the slide, W, from being thrown back beyond a given distance each time. The operation is conducted with great dispatch, and the process is a very different thing in respect to the facility and simplicity of action in comparison with a description of the parts. Fig. 2 will show how the pins are carried into the grooves.

Foreign Correspondence.

LONDON, 27th Feb., 1851.

Some demurrers had been entered with respect to the strength of the Crystal palace, but the commissioners of the building have, I think, clearly demonstrated its entire fitness for the purpose designed, as it respects strength. The different parts have been fairly tested to prove this, and the last experiments were those of testing the strength of the galleries, the results of which I hereby send.

From various experiments which have been made by Mr. Brunel and by other engineers, it has been found that the average weight of a number of persons standing together in a confined space rarely exceeds 50 lbs. per square foot; that by packing men as closely together as possible it might be brought up to 70 lbs. or 80lbs.; and that not by even picking heavy men, and squeezing them into the smallest compass, could an average of 1 cwt. per square foot be obtained. One hundred weight was therefore assumed as an amount certain to cover any unforeseen combination of circumstances. On this assumption no bay of gallery 24 feet square could possibly be called upon to carry a load equal to 30 tons.

As it was ingeniously contrived by the arrangement of the flooring that this weight should be distributed over four girders, and every girder had been submitted, on the ground, to a pressure of 15 tons (that being only half the maximum weight that each was capable of supporting), applied exactly at the points upon which the floor would have to be borne, it will be manifest that a very large margin had been left to provide for contingencies arising from any motion which it was possible might be communicated to such a load.

The immediate object of the experiment was to assure by various tests of the severest character, to what extent oscillations could be conveyed to the gallery by the regular motion of a living load, and to ascertain whether the provision which had been made to meet contingencies was sufficient.

The preparations made for the experiment consisted of the construction of a perfect bay of gallery, with its floors, binders, girders, and connecting pieces, in every respect complete, and similar to the actual gallery, supported upon four points, bedded on temporary foundations. Rows of planks the full width of the platform, led up to it, and down from it, so that a row of men as wide as the gallery might be able to march up and down in close column Three hundred workmen were first assembled by the contractors, and allowed to cover the platform and the planks connected with it. They were then compressed into the smallest space upon which they could stand.

The load borne on the planks represented the share of pressure which would be produced by the crowding of adjacent bays of gallery. The amount of deflection produced by this load was inappreciable. The men then walked regularly and irregularly and ran over it. The elasticity of the floor, allowing play to the timbers and the wrought-iron work, was admirably developed by this test, and it became apparent that this quality of elasticity was of the greatest value in protecting the cast-iron girders from sudden shock.

Thus, in the severest test which could possibly be applied—when the men, standing closely packed together, continued jumping simultaneously for several minutes, although in the regular vibration of the floor the binders played up and down—the extreme deflection of any of the girders did not exceed a quarter of an inch.

As the contractors' men were unable to keep military time in their step, and it was considered desirable to ascertain the effect of perfectly regular oscillations, the whole of the corps of Royal Sappers and Miners on the ground, set in close columns, were marched over and over, and all around, and were finally made to mark time in the most trying manner. With the results of this last test the eminent scientific men present expressed themselves highly gratified, observing that while at the climax of vibration, the motion did not exceed that common in ordinary London houses at evening parties.

When it is remembered that the arrangements for the exhibition in the galleries require passages only six feet wide on the sides of the galleries, counters for light goods occupying the central portion most liable to strain; and when it is borne in mind that the galleries are of such extent as to render the uniform vibration over any considerable proportion of their whole area impossible, the results of the experiments we have described cannot but be regarded as calculated to relieve the apprehensions of the most timid.

There are arrivals every day of articles from foreign countries, and a keener excitement among the masses is perceptible respecting what is to be seen at the great raree-show. Some wonderful things have already arrived from distant places. Scotland and Ireland; have sent up some rare curiosities, among which there are from Edinburg, model of modern Jerusalem; sculpture in freestone and plaster of Paris; imitation of Mosaic tables; model of John Knox's house; design of Free Church College; Plaster of paris models of Arthur's Seat, Salisbury Craigs, air-tight vessels to support persons in the water in case of shipwreck, land cultivator or digging machine, model of a steam plough, paper cutting machine, paper folding ditto, model of high-pressure steam boiler for preparing bone manure and steaming food for cattle, model of steamship, fire escape, machines for sowing and dressing corn, railway signal lamps, model of house, illustrating a simple mode by which ordinary rain water may be rendered available in cases of fire, model of a carriage constructed so as to prevent horses from running away, a portable shower bath, a set of miscellaneous acting level crossing gates for railways, a locomotive and economic sheep dipping apparatus, model of a patent slip for hauling up vessels for repair, sheep washing apparatus.

The Scotch are great upon steam and agricultural improvements. From Belfast, Ireland, a most wonderful curiosity in the shape of pictures by needlework, the handiwork of an Irish lady of Colraine, have been presented. The style is novel, and so are the materials employed. Held at a short distance from the eye, they have all the effect of the best and boldest line-engravings, of which, indeed, they are clever imitations; but when closely observed, they are discovered, to be exquisite specimens of needlework. One of them, a view of the Giant's Causeway from the East, is wrought with the ravellings of black crape, upon a ground of the finest Irish linen. Another, an Italian landscape, is wrought with the same kind of thread, upon fine white silk; a third, a view in the Arctic regions, is traced with white and black threads, upon dark-grey silk to represent the sunless sky, and upon white silk to represent the snow-clad foreground. Vain would be the attempt to convey an adequate idea of the admirable nicety—the absolute perfection—with which the faintest, as well as the deepest, shades are managed by this process, from the finest pencilings of the sky tints to the broadest masses of color in the foreground. Even where figures are introduced, the folds of the draperies and the lines of the countenances are touched off with surpassing delicacy.

I await with no little restraining of my curiosity bump, for the display of Shan and Yhan from China, along with my countrymen from Canajoharie, Scoharie, Canesota and Minesota.

EXCELSIOR.

New Process of Daguerreotyping.

We learn by the able correspondent of the Philadelphia Ledger (W. H. Fry), that the following improvement in the process of Daguerreotyping has just been discovered by Niepce, the first discoverer of the art. The engraving is to be submitted to vapor of iodine (at a temperature of 15 or 20 degrees) during about ten minutes; a longer time is necessary if the temperature be less elevated; ten grammes of iodine to be used per square of 4 inches. The paper intended to receive the impression is to be covered with a coat of paste, taking care previously to have it moistened with water containing one degree of pure sulphuric acid. The proofs, after being pressed with a linen cloth, present a design of admirable purity. Those impressions, taken on paste will, however, in drying, become vaporous; but if taken on paper prepared with one or two layers of starch, the design will not only be clear, but will preserve much better. What is most extraordinary is, that many impressions may be taken from the same print without submitting it to a new preparation—the last proofs being always the clearest. Designs of various colors may thus be obtained according as the paste is more or less boiled, or according to the quantity of acid used. Proofs may also be taken on different metals by observing the following precautions. In submitting the engraving to the vapor of iodine, care should be taken to have it perfectly dry, in order that the white portions of it may become impregnated. In this case it should be exposed but a few minutes to the vapor. Let it be afterwards applied, without wetting it, to a plate of silver, and then placed under a press; at the end of five or six minutes there will be a most faithful reproduction of the original. By afterwards exposing the plate to the vapor of mercury, a proof similar to that of a daguerreotype is obtained.

Soundings Obtained at Sea.

Professor Bache, writes to the National Intelligencer as follows:

The following interesting information is from a letter addressed to me by Lieut. John R. Goldsborough, U. S. Navy, formerly assistant in the Coast Survey: it is dated "U. S. ship Saratoga, Cape town, Cape of Good Hope, December, 26, 1850."

"During our voyage from Rio de Janeiro to Saldanha Bay, Cape of Good Hope, being in latitude 28 deg. 21 min. S., and 29 deg. 17 min. W., we sounded and obtained bottom at the depth of 3,100 fathoms. Our sounding apparatus was a thirty-two pound shot, slung with wire and attached to a small line 5,000 fathoms long, and sufficiently strong to bear a weight of sixty pounds.

The soundings were as good and fair as any I have ever seen obtained—the line up and down as taut as it could be, and when attempting to haul it on board, after procuring soundings, it parted about fifty fathoms from the surface. The time occupied in sounding was one hour and nine minutes."

Correction.

The Auburn Advocate has started an article in relation to the invention of an improved printing press, which is calculated to give a wrong impression. Mr. J. L. Burdick, of this city, has invented a press, and has one in operation, on which he is *experimenting*, which he claims will do as good work when perfected, as any press now in use, and save the labor of one pressman, and be offered at a cheaper rate He does not claim that it will do work *faster* than any other cylinder presses. When he gets his press perfected, we will give further information.—[Baptist Register, Utica.

This is the press to which we referred on page 196. This places the matter in the proper light.

Steamboats, Railroads, and Telegraphs.

The steam engine is the pointer of social reformation; it occupies, or nearly so, the position which the printing press did about four hundred years ago. The steam engine is already on its road from the West, approaching the frontiers of Turkey; while at the same time it is starting from the East, and projecting the course from Calcutta to Hyderab, and so forward. These two will meet at no distant day at the station house at Bussorab! A belt of semi-civilization will soon bring about enlightenment on both sides. Ignorance and intolerance, and long-cherished national antipathy will be placed between two fires—those of science and peaceful and profitable intention, and will soon yield to a better state of things. It is only a question of time, and that probably a short one. But the great plan agitated in Europe is the connection of Vienna—to which there is nearly a continuous road from Ostend—through Pesth, Constantinople, Asia Minor, Persia, Beloochistan, with India—still further, with China. We are quite aware that political questions may, and most likely will arise, the prominent one being the old rivalry about the Saxon power in the East. These questions will, however, have to be settled some time or other, and we do not see any difficulty in their settlement if entered upon with a proper spirit. We already anticipated the time when either Great Britain or Russia will be announced as the head of the Board—as chairman or manager of the "Asia Minor, Euphrates, Persia and Beloochistan Railway and Steam Company." Colonel Chesnep, in his account of the Euphrates expeditions, says that science might so far remove existing impediments, and at no immoderate expense either, as to bring Bombay within eighteen days and a half of London by sea, and fourteen days and a half by a route through the Continent; whilst messages might be conveyed by the aid of the electric telegraph, when practicable, in eight days and ten hours! When we remember that Boston and New York are now within ten days from Liverpool, and that the works now going on through the isthmus connecting North and South America will bring about results which we dare not at present attempt to enumerate, we feel that mind is really triumphant over matter, and that time and space are reduced to nonentities when encountered by science; and when a railroad is built across our continent to San Francisco, and steamers running from that port to China; why, an Englishman will be enabled to leave London on the first day of one month, and be in Canton in 24 days. At present it would take him 84 days, and that a pretty quick passage to perform such a trip.

Liabilities of Railway Companies in England.

A case of considerable importance to railway companies and the trading public was recently tried at the Liverpool County Court The question was, whether the London and Northwestern Company were responsible for the loss of a parcel of silk entrusted to them for conveyance from Liverpool to London, but which was stolen on the road. The owners of the silk were Messrs. Jeffrey & Morrish, the large firm of silk-mercers and drapers of Liverpool. They were the plaintiffs, and the London and Northwestern the defendents. The silk was the value of about £17, ($82,45). The County Court jury did find and return a verdict for the plaintiffs; thus in the teeth of the statute, throwing the loss upon the company, and, of course, declaring that the robbery was the act of the company's servants and none other.—[Ex.

All carriers are liable for the goods committed to their trust. If this were not so the goods might disappear, and those who owned them might whistle for remuneration.

The manufacture of salt has been commenced at the newly located town of West Columbia, on the Ohio River, in Mason County, Va. About 80 barrels are turned out daily. The town has sprung up with astonishing rapidity, having been in existence less than two years. It numbers 61 houses, a foundry, a flouring mill, a saw-mill and five stores.

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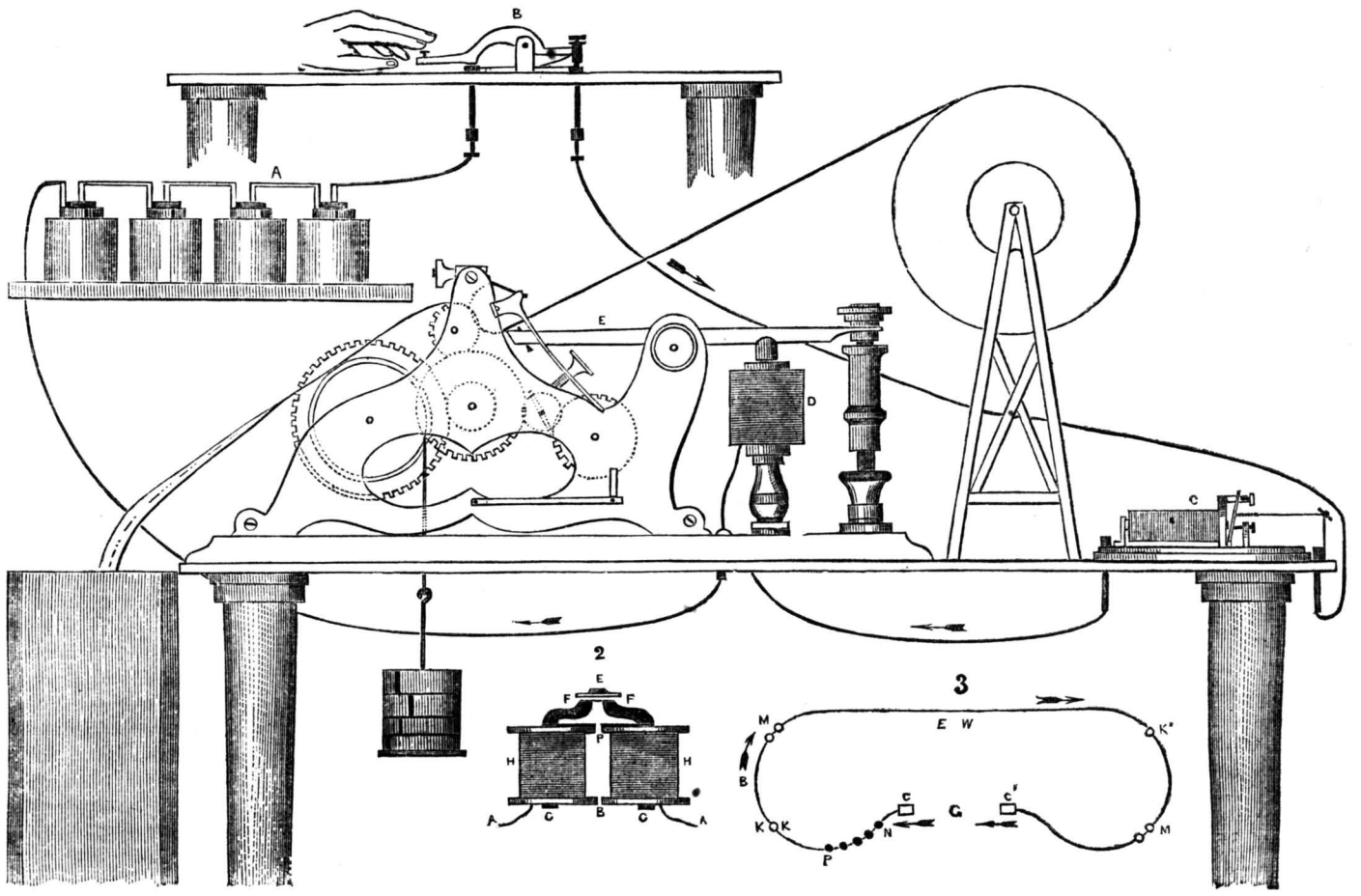
THE AMERICAN ELECTRO MAGNETIC TELEGRAPH.

We are indebted to Messrs. Fowlers & Wells for this beautiful engraving of the Telegraph, which appeared in the last number (March) of their unrivalled magazine, the "American Phrenological Journal." The article for the Journal was prepared by the Editor of the Scientific American, and described the Morse Telegraph operated by a main circuit and a distant battery, so as to convey to those who were not acquainted with it a clear idea of the *principle* of its operation. For general information, to convey a simple idea of the nature of the Telegraph, we could not better that article. Along with a description of the figures here presented, we will give the brief details, which are more dry and complicated, but which will not be, on that account, unacceptable to our readers.

The principle of this telegraph is based upon the temporary induction of a piece of soft iron with magnetism, by the current of galvanism passing around it; this piece of soft iron is called an electro-magnet, and it operates a walking-beam pen, to make mechanical marks upon a ribbon of paper carried along with a uniform motion, against the face of a grooved metal roller.

The four cylindrical vessels, marked A, are the galvanic battery. Any number of cylinders may be employed—from ten to thirty are used in telegraph batteries. A cylinder of zinc and a thin plate of copper or platina, separated by a porous earthenware vessel, and all placed within a glass vessel containing weak sulphuric acid surrounding the zinc, and the platina dipping into weak nitric acid, in the porous vessel, forms a battery and generates electricity. Every one cylindrical vessel shown above is just a duplicate of another, and the whole are united to form a powerful current, like two or more boilers being used for steam. To form the electric circuit, one end of a copper wire is attached to the end platina plate, and the other end of the cop-



per wire to the zinc cylinder. A wire is not required to run round all the circuit—any metallic connection, such as brass plates, &c. &c., may form part of it. The battery A, and the small table above it, we will suppose to be at the Philadelphia station, and the Telegraph Register, below, to be at New York. A wire runs from the platina plate up to the metallic connection on the small table above, and the other wire runs from the zinc, and is connected with the first wire by the metallic connection of the register at New York. This forms the circuit. B, on the small table above, is the key for breaking and closing the circuit. This key is fixed upon a pivot axis, to be gently pressed by the operator's fingers on the top of an ivory button. The circuit is now broken, and a small gap in the key above the wire from the battery, shows the metallic connection to be open. By pressing upon the butt end of the key, its metal surface comes in contact with the metal termination of the wire from the battery, and then the circuit is closed, and the electric fluid fleets along to New York.. The question may now be asked, "how can the breaking and closing of the circuit make marks on a piece of paper in New York? Will not the current just run along when the circuit is closed, and then stop when it is broken?" Yes, it will. "Well, then how can it write at New York?" If a narrow strip of white paper be drawn by the left hand against, and under a small metal roller with a groove running around it, then by striking suddenly with the right hand a pointed instrument (not sharp enough to cut) up against the paper, into the groove of the roller, and then suddenly dropping the hand, an indent, like . will be formed on the strip of paper. If the instrument instead of being suddenly dropped, is held against the paper for a short time, a mark like —— is made. Out of these two marks, with spaces between them, the alphabet of this telegraph is formed; and we will now show how this is done in as few words as possible. At the right hand of the figure there is a ribbon of paper represented passing from the roll between two small metal rollers of the register. This strip is drawn through between the rollers by their motion, they revolving towards the paper roll, drawing in the paper. Motion is given to these rollers by a train of clockwork gear wheels, which are moved by the weight seen below the machine. The upper small roll, represented by dotted lines, has a small groove running around its periphery, and the ribbon of paper, is drawn through against its under surface. The instrument to indent the paper is a pen-lever, E. It is suspended on a pivot axis, at its middle, and its action is like a walking beam, but the stroke it makes is very short—not over the eight of an inch at both ends. This pen-lever is very nicely poised, and at its extreme end from the paper, its stroke is nicely regulated by a set or button screw. The inner end of this lever has a metal pointer, as is shown in the engraving, passing up through it, nearly touching the strip of the paper. If the finger is put upon the end of this pen-lever, above D, and worked like the key of a piano, the pointer will strike up against the strip of moving paper, and make the kind of marks we have already spoken of. A dot will be made by a quick tap, and a dash by pressing a little longer on the lever—geometrically speaking, a succession of dots forms a line, and the combination of those dots, . . dashes, — and spaces, form the telegraphic alphabet.

The question now to be asked and answered, is, "how is this lever or walking beam pen made to vibrate up and down by the electricity, to indent the paper, and write these characters?" This is done by the electro magnet, which developes the mechanical force of the electricity. D is the "electro magnet." This magnet is represented by 2 below the register. It is made of a piece of soft iron, pure and free from carbon, sulphur, &c., &c., and is wrapped round with fine copper wire, covered with silk. This coil of wire is called a *helix*. It is attached to the wire of the battery by a metallic connection, at one end, and the other end of the helix—for is must be made of continuous wire—is attached to the wire from the other end of the battery, thus forming part of the electric circuit. This magnet is made almost of a U form, but the form is not so essential. It looks almost like a double spool of silk. H H are the helices wrapped round the legs of the soft iron. The wire from one passes at the top to the other at P. A A are the ends of the wires attached to the coils. C are wooden heads to insulate the magnet on the table from any metallic connection, except, the coils and the pen-lever. F F are the prongs of the iron magnet, and E, represents a piece of bright iron on the pen-lever. The top and bottom heads of the coils are buttons of ivory. The legs of the magnet are joined below. If the piece of metal E is made broad, the prongs F F need not be bent at all, for the ends of the magnet projecting above the top ivory button, will answer every purpose. The permanent magnet, or loadstone, will attract a piece of iron and hold it with great force, but the electro magnet has no attractive force, except when the electric circuit is closed, and the fluid rushing along the wire, and then its attraction is considerable. This is the difference between the permanent and electro magnet. The end of the pen-lever has a piece of iron on it, above the magnet, therefore, when the operator at Philadelphia presses his hand upon the key, B, the circuit is closed, the end of the pen-lever above the magnet, D, is drawn down to the magnet, and the pointer at the other end is thrown against the strip of paper. Whenever the finger is lifted off the key, the circuit is open, the magnet loses all attractive power, and the pointer then drops and does not touch the paper. It will thus be observed, that by tapping on the key at Philadelphia, the circuit is broken and closed to New York, and the electro magnet, D, actuates the pen-lever to produce the characters we have described, which are put together to make words, and the words then put together to make sentences. A permanent magnet would not answer at all, to make permanent marks. Although a key is exhibited as placed at the Philadelphia station only, yet there is a key and register placed on the same table at every station; and this is necessary for the reception and transmission of messages. Each station has a battery also, and each register a magnet, connected with it. This magnet is represented by C, and is placed in connection with the register at the end, where the positive current is received by the battery before it reaches the register. No magnet is required for a short line. The line of telegraph represented in the engraving, which unites New York and Philadelphia, is made up of a metallic circuit, and we have stated that there must be an "electric circuit" formed, or the electricity will not be developed. An electric circuit, however, can be formed between New York and Philadelphia with only one wire. This plan is represented by figure 3. The ground, by this arrangement, is made to form part of the circuit. B represents Philadelphia, and the opposite end New York. C is a large sheet of copper, to which a wire is soldered, and connected with N, the negative pole of this battery. This sheet of copper runs down into a wet place in the earth. From that positive pole, P, of the battery, the wire proceeds to K K, the key, then to M, the register, then along the east wire to K—the key at New York, then to M, the register, thence to another metal plate, C, buried in the ground. From C, at New York, to C, the plate at Philadelphia, the ground, G, forms part of the circuit. The use of the ground, as part of the circuit, is not a little mysterious—the fact, however, is beyond all question. Every register magnet is operated by a local circuit battery set in action by the magnet C in the line.

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New Inventions.

New and Ingenious Tooth Puller.

Dr. J. C. Burch, of Evansville, Indiana, has invented one of the most ingenious and effective instruments for pulling teeth stumps that we have ever seen, and we believe it is the best for the purpose in use. The cause which brought into energy the faculty to make this instrument, was the great number of decayed teeth which he had been called upon to extract—teeth of which nothing was left but the stumps. He found great difficulty with the old instruments to rout out such troublesome old friends, although very ill-liked ones, and he had recourse to his head to conceive something to meet the case—for doctors and lawyers have their cases, and very serious ones too, sometimes. The new instrument has a neat small pad, forming one side of the jaw, while the other is of the hook-bill form, like the old kind, and has a lateral motion. The shoulder and lever handle of the hook-jaw has a joint in it which is operated by an inside spring, so that when the two handles are brought together like those of a pair of pincers, the joint spoken of throws the hook jaw into and grasps the tooth at once, while the cushion is made to rest on the jaw, and gives a firm fulcrum for action. The operator jerks the decayed rascal tooth from its seat with the utmost ease. The Doctor has found this instrument to operate even beyond his expectations. It is no trouble either to patients or the operator—we mean the drawing bad teeth.

Improved Grain Drill.

Messrs. L. Bickford, and Henry Huffman, of Macedon, Wayne Co., N. Y., have invented some valuable improvements in Grain Drills, for which they have taken measures to secure a patent. There are a number of movable tubes or spouts which conduct the grain from the hopper to the ground. These spouts can be raised singly, so as to use only one or two, or any number desired. They can also all be raised at a moment by a single lever, which turns a roller shaft, to which each single spout is attached by a collar.

The hopper which receives the grain has a slide in the bottom of it, into which are cut a number of slots through which the grain passes into a small channel, in a revolving roller above the tubes, and which convey the grain from the hopper to the said tubes. This roller, has large channels made in it, for large grain and small channels for smaller grains. The slide spoken of in the hopper, by moving the slot over the large channels, will allow the large grain to pass down, but if it is desired to drill in small grain, the slide is just pushed in a little farther, so as to have the slots above the small channels in the roller, when at that time the large channels will be closed by the same slide. The revolving conduit roller is fixed below the hopper, and is made to revolve by having a spur wheel outside, gearing into a spur wheel on the axle of the moving wheel of the machine. The main axle and the conduit roller can be connected by gearing wheels, so as to give the roller any speed desired, and thus drop the seed at any required distance, one foot, two or three, as may be wanted in the drills.

New Swingle-tree for Carriages.

Mr. James Adam, of Norfolk, Va., has invented a safety spring swingle-tree, which is so arranged that both traces can be slipped off at the will of the driver and the horse detached in a moment from the vehicle, thus obviating any danger from the animal's taking fright and running away.

Balloon Navigation.

It is said that a balloon has been constructat Paris which obeys the helm, and can be driven against the wind by its conductor. This machine has made several voyages around the Hippodrome, and has been made to turn in every direction, but its progress in the air has not yet been tested, and the utmost secrecy is observed as to the means employed.—[Exchange. [Old invention and a no go.]

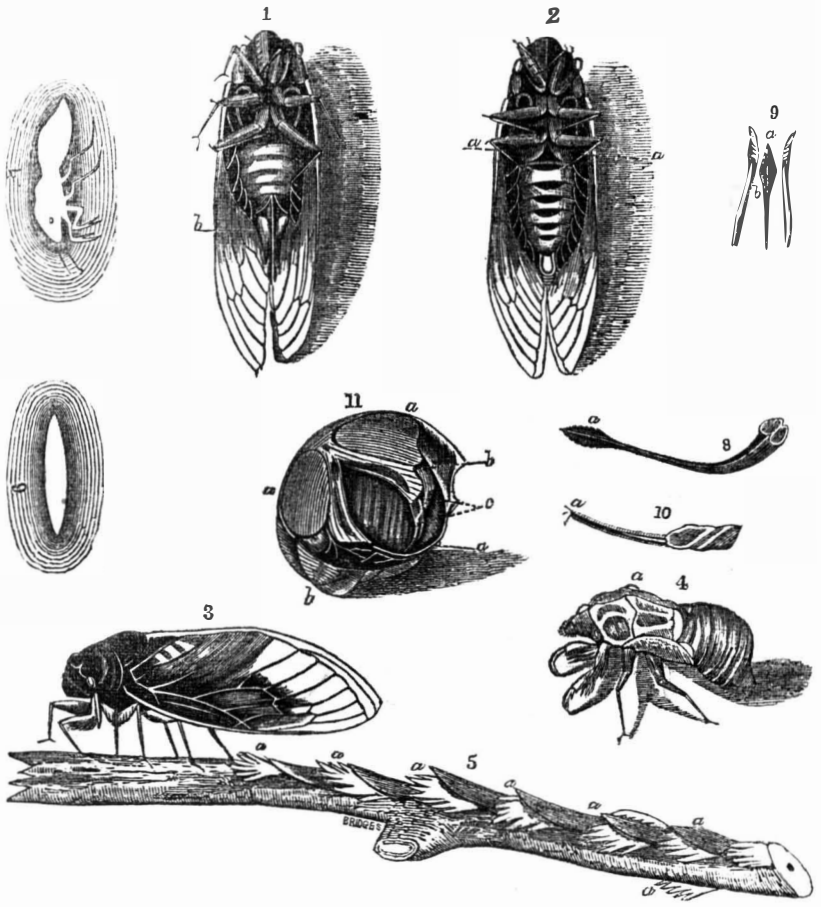
To Clean Rusted Iron Work.

Cover over the work with oil and let it stand for five or six hours. Then wash it off with strong soap-suds and a good brush. The brush must be long in the bristles. Iron work should never be left wet any length of time.

Restoration of Sight.

An Italian peasant, born blind, of a blind mother, was not long since successfully couched by a Venitian surgeon. The patient had previously been able to discriminate between the day or night and he immediately called the white light, and the black dark, but could not distinguish red from yellow or blue from green. When first taken to a window and shown the blue sky above and the living world below, the man though a poor half witted creature was overpowered by his emotions and actually swooned.

THE AMERICAN LOCUST "CICADA SEPTEMDECIM."



An article in number 23, page 170, contains some errors of fact and inference which ought to be corrected. I have made this remarkable insect a special object of study for seventeen years, beginning in April, 1834. During the spring and summer of that year I made a careful examination of its anatomy and habits, from the perfect larva state to the descent of its progeny, in July and August, into the earth.

The accompanying drawing is made from a painting I then had executed by an excellent artist, from the living subjects in all their various stages.

Figure 1 is a female of the natural size; *b* is the *ovipositor*. Figure 2 is a male of the natural size; *a a* are scales covering the membranes of the large cavities. Figure 3 is a side view of the natural size. Fig. 4 is a shell of the pupa; *a* is the opening in the back through which the insect escaped. Figure 5 is a section of the Mock Orange limb, with the excavations made by the female (*a a a a a a*). Figure 6 is an egg magnified 10 diameters. Fig. 7 is a young insect magnified 10 diameters. Fig. 8 is the *ovipositor*, magnified. Fig. 9 are parts of the *ovipositor* separated and magnified. Fig. 10 is the rostrum or snout magnified, the capillaries, (*a*). Fig. 11 is a section of the chest of the male at the upper ring; *a a* are the posterior walls of the large cavities within the chest; *b b* are the external musical membranes or drums; *c* are the two muscles; *d* the capacity of the chest.

I have frequently found the larvæ since 1834, in the ground where they went down in that year, but in no instance have I found them as stated by the writer above alluded to, "in comsact cells, with no outlet except that in immediate contact with the roots." I find them from one to two and a half feet from the surface of the ground, in oblong cells of about an inch in the shortest and two or three inchest in the largest diameter, the cells generally being horizontal. These cells, however, appear to be *movable*, that is, the insect digs the earth from one end and packs it in the other. The object of these movements seems to be to obtain fresh vegetable matter on which to feed. The insect obtains its food from the small vegetable radicals that everywhere pervade the fertile earth. It takes its food from the surface of these roots, the moist exudation (like animal perspiration), for which purpose its rostrum or snout is provided with three exceedingly delicate capillaries, or hairs, which it projects from the tube of the snout, and sweeps them over the surface, gathering up the minute drops of moisture. This is its only food. The mode of taking it can be seen by a good glass. It does not puncture the bark, because it has no instrument for such a purpose; the inference intended to be drawn that they puncture the roots of pear trees, and thus cause the death of the tree, is therefore erroneous. It is also an error to say, "should a tree on which these larvæ have been feeding be cut down, the insects perish for want of wood." If the author of the article referred to will find a place where trees or shrubbery grew in 1834, and which were cut down, the land cleared, and even houses built upon it sixteen years ago, she will find the locusts there *now*, and will see them emerge from that ground about the 25th of next May, just as undoubtedly as she will from under the very tree in which they were originally deposited.

The tract of country that will be occupied this year by the locusts extends from the Patapsco river, in Maryland, to Bucks County in Pennsylvania, and from the Delaware river to the middle of the range of the Allegheny Mountains, including Bedford County, Pa.

The insects leave the ground about the 20th of May, in Maryland, to the 25th of May in Pennsylvania.

There is another locust district this year in Georgia and South Carolina—a small tract embracing a portion of these States, and another small one in Mississippi. I have the location of thirty-four different districts, occupying fourteen of the seventeen years. The other three years are no doubt occupied in the western wilds of North America, between latitude 43½° N., and 29° S., beyond which parallels I have not been able to hear of them. The locusts will appear about New York in 1860; this district extends to the Connecticut river, East, and as far North as Washington Co., N. Y., West to Amsterdam in Montgomery Co., and a large portion of New Jersey.

I have seen specimens of the insect from a great number of districts, and can find not the slightest difference in them.

In the whole range of natural history there is nothing more strange than the fact,—which has been established with as much certainty as any fact in astronomy ever was,—that a little insect not as large as the smallest ant shall pass into the ground and remain there seventeen years, and then emerge in the form of a comparatively large insect; or, that a certain tribe of insects shall appear here in immense numbers—numbers almost equal to those of the sands on the sea shore—exactly once in seventeen years, always in the same month, almost on the same day and same hour. It is indeed wonderful, but it is nevertheles true.

The music, song, or sound, produced by the myriads of insects in a warm dry day from about the 25th of May to the middle of June, is wonderful. It is not deafening as many describe it,—even in its height it does not interrupt ordinary conversation. It seems like an atmosphere of wild monotonous sound, in which all other sounds float with perfect distinctness. I never could distinguish anything like the word "Pharaoh" in these sounds. After you have become satisfied with the novelty of this music, which will be in a day or two, it becomes exceedingly tiresome and doleful, and to many very disagreeable. To me it was otherwise, and when I heard the last note on the 25th of June, the melancholy reflection occurred—shall I live to hear it again?

Probably the first indication many persons will have of the approach of the locusts, will be the industry with which they will find the hogs rooting up the ground in the woods and fields. It is a great festival for them. And as soon as the insects appear above ground, chickens, turkeys and all poultry will also have their feast. So fond are the fowls, birds, pigs &c., of these insects, that they will scarcely touch other food during the locust season. This has a remarkable effect upon all hen's eggs laid after the locusts appear—their yolks are nearly white. The chickens become very fat, and of fine flavor. Even the little wren will be seen flying off with a locust in its mouth, and all the insectivorous birds then have a great festival.

From the 1st to the 20th June, all shrubbery of value should be protected, either by covering it with cheap gauze, or, in case of pot plants, by keeping them in the house. About the 15th of June they commence depositing their eggs About the 25th of June the old locusts will have disappeared altogether.

In conclusion, people ought not to be alarmed. The W on its wings does not indicate *war*, nor the E England. The "sting" of the locust never killed any body, for the best of all reasons—because it *has none*. The insect has neither means of offence or defence; and all the stories that are told of children being killed by their sting or bite are fablous. If death ever was produced, or any less injury when locusts were present, some other cause effected it.

I have given the public such a picture of this most interesting insect, as will enable any one to observe them understandingly at the approaching season.

The accompanying drawing [represented by our engraving above] is a fac-simile of them in all their stages. Yours,

GIDEON B. SMITH, M. D.

[This description of the "Seventeen Year Locust," will be of great interest to our readers, and especially to those of them—and the number is not small—who are residents in other countries than our own. The communication requires no comment.—[ED.

Eratum.

The direction of Mr. Child, in last week's Sci. Am., in describing his invention, said "Putnam Co., Ohio;" it should have been "*Illinois*," not Ohio.

Notice.

We have quite a number of communications on hand, and a number of useful books, &c., to notice, all of which are unavoidably left out this week.

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Scientific American

NEW YORK, MARCH 22, 1851.

A Word to All.---The Scientific American.

We send four thousand copies of this number of our paper to those who are not subscribers, in order to let them see what kind of a paper it is; and to those who do not know us, we say, read the paper throughout—if you like it, subscribe; if you don't, or if you cannot, then hand your number to a neighbor, and be sure that he is fond of mechanical or scientific pursuits, or has a taste for such matters.

The Scientific American is now in its Sixth Volume, and from a small beginning it has attained to the extensive circulation of 16,000 copies weekly. It has taken much money and application to bring about this result. Since we commenced its publication, many papers of the same kind have been started, but not one has been successful; they have all failed. At present we remember no less than six papers which have "come and gone." It is very difficult to establish a scientific paper, devoted, as our is, more especially to the practical arts.

Many who receive this number may be somewhat suspicious, as a great number of papers are got up for the mere purpose of catching transitory subscribers. Our character is so well known, that any one who has such a suspicion is requested to remember that this is our 6th Volume, and to make personal inquiry about us.

It is a leading part of our policy to keep improving every volume. Those who have taken the Scientific American from its first volume, well know how much we have improved. In order to keep improving, it is necessary to keep on extending our circulation. Our friends who have the spirit of progress, have hitherto assisted us to do this, until we have attained to a circulation far greater than that of any periodical of the kind in the world. We still trust to our readers in endeavoring to get neighbors to subscribe, by putting specimen numbers into their hands, and lending them a number sometimes to read.

At the present day no one can pretend to be intelligent, and be ignorant of what is passing in the world of science and art. The Scientific American is the only weekly source, in our country, to obtain the greatest variety and most particular descriptions of all new and useful inventions and discoveries. From five to seven good engravings illustrate every number, and at the end of the year this makes an illustrated volume respecting useful things, which has no equal, and which, if in a book, would cost from eight to ten dollars.

Those who wish to subscribe for the back numbers of this volume, can be furnished with them.

Cast Iron Pavements.

On page 108 we commented, in an article on pavements, upon a pamphlet published by Mr. Thomas A. Davies, of this city, describing a method of employing cast iron plates with rough surfaces, as a superior substitute for all other kinds of pavements heretofore used. We objected to this kind of pavement, and stated that we believed it was not so good as small granite blocks. We have paid considerable attention to, and have examined a great variety of pavements. Our unfavorable opinion was a candid one, but rather hasty. Mr. Davis called upon us the week after, as stated on page 197, and wished us to make a full personal examination for ourselves, saying "he was convinced that we would come to the same conclusions to which he has come." He also stated that he was convinced that we possessed a great deal of information on the subject, and if the plan proposed by him was good, it would be a general benefit, and that being the case, it was against our good practice to exert any influence, by opinions expressed, contrary to the general good. When we find that we have held a wrong opinion, it is just to say so, and we conceive it to be the only honest plan to pursue. Since that time we have had a letter from Mr. B. G. Brooks, of Holyoke, Mass., on the same subject. He has sent us a drawing of a plan for a cast-iron pavement, and he says, "he thinks they are designed to supersede all others, in cheapness and unlimited durability." It is not possible for us to give a good idea of this plan without a drawing, but we have come to the conclusion that he is right, and as we have presented an abstract of Mr. Davies' plan, on page 108, we will state that we have examined, day by day, for about two weeks, the cast iron plates which have been laid down over the water mains in Broadway, and other streets, for ten years past, and they are nearly as perfect as the day when they were laid down. These plates have not had fair play either, for they are not bolted down, but simply laid upon the wood, and are loose. They are mostly lower than the pavement, thus being in the very worst position for wear, owing to the sudden downward shocks of cart and omnibus wheels. Nevertheless, for all this, they are an *enduring* testimony that cast-iron plates are "unlimited in durability." The surfaces of these plates are check-ridged, to allow the horses' feet to get a firm hold and not slip. We would have thought that these small ridges would have been ground down —abraded—by the action of the wheels. Cast iron, however, does not wear by a rolling motion over it, although it does—not very slowly either—by human feet shuffling and sliding on it. It is this nature of the metal that will make it answer so well for pavements.

Mr. Davies, by his plan, bolts down his plates, and his wood presents a slightly elastic foundation—the very thing required. But from what we have seen of its durability, we believe that the metal plates laid down in a good wood foundation would stand for twenty years, although they were not bolted down at all. This pavement will afford an easy plan to get down to gas pipes, sewers, and water mains, and the plates can be cast in any one place to make pavements a thousand miles distant. We believe it will be cheaper than the granite block pavement, and we hope that our city authorities will order a section of one of our public streets to be paved by this plan. We sincerely wish this, in order that we may see the plan fairly tested on a scale commensurate to the forming of a full and certain incontrovertible opinion of its practical qualities, for assuredly it is a very important and interesting question to every city and village, not only in our own country, but, we may say, to the whole world. Let this improvement be but fairly demonstrated (and a fair test will, we have no doubt, give affirmative results), and then who can estimate the great improvements and benefits that will be conferred upon our country, by having all the streets of our cities and villages paved with cast-iron; the expense will be less, by a vast deal, in the end, than the worst kind of cobble stone pavements.

Steamboat Boiler Bursting on the Western Waters.

How criminally reckless we are, as a people, of life. Not a week passes away without the occurrence of some terrible accident, whereby a number of human beings are suddenly ushered into eternity. If it is not an explosion it is a railroad collision or the falling of some buildings. We must say, however, that the destruction of life is far greater by steamboat boiler explosions than anything else, out of the natural course of events. More lives have been lost by such accidents than by all our wars. The Mississippi is the great and red theatre of such disasters, and no doubt the majority of explosions are the result of recklessness. On the 2nd of this month, the steamboat Oregon, from St. Louis, Ky., bound down the river, burst her boiler just after the passengers, about one hundred in number, had partaken of dinner. The loss of life was fearful; no less than twenty-five, it is stated, died after the accident, from the scalding they received. Eight firemen, all the waiters, and a great number of passengers were killed in an instant. Now it would appear that there was plenty of water in the boiler, and the only way to account for the accident is, that there was too great a steam pressure. It makes no matter whether the pressure is 50 or 100 lbs., it may be too great at the lowest pressure, if the boiler is not good, but we have information at hand which informs us that far more than 100 lbs. pressure is sometimes employed by the engineers. A correspondent writes us, saying, "the Western boats generally use Evan's Safety Guard, but when the water gets below the flues, as it sometimes does by the boat lying on one side, to prevent the guard whistle from giving an alarm the engineers stop it so as not to frighten the passengers. The safety-valve is generally weighted to carry about 100 lbs. of steam, but beside this they have a rope fastened to the lever of the valve which goes to the engine, over pulleys, for the engineer to blow off the steam by pulling a ring, but this rope is double, and has an opposite ring on which, if a counter weight be used, (and I have seen wrenches and pieces of iron, weighing at least 50 lbs., placed on this, with the rope passing over the pulley,) will exert at least from two to three hundred pounds on the safety-valve." This information explains to us the fruitful cause of many explosions. Engineers, however cautious naturally, become reckless by frequent exposure to danger. A Commission should be appointed by Congress to search *incog* into such matters.

Steam versus Stame as a Propelling Power

Mr. James Frost, of Brooklyn, engineer, has published a letter giving some history of his discovery of "*stame*," which consists in heating steam apart from the water in the boiler, and converting it into *stame*, whereby, according to our former publication (Vol. 5), 4 degrees of heat doubles the volume. He states that Mr. Allen, of the Novelty Works, took out an English patent for the discovery, for half of the profits, after Mr. Frost had shown him the practicability of the discovery. He says that Dr. Alex. Stevens, at the head of the New York University, took an interest on the same terms in Scotland and France. He also states that E. K. Collins, Esq., took the precaution to investigate the matter by sending an engineer in whom he had confidence, to scrutinize the experiments, and personally witnessed five experiments with an eight horse-power condensing engine, working alternately by steam and *stame*, and that he was accompanied by Profs. Renwick, of New York, and Cooper, of Georgia, who expressed themselves satisfied, and then Mr. Collins purchased Mr. Allen's interest in the English patent. Mr. Frost says that a long list of eminent persons might be named who witnessed and were satisfied with the details of the discovery, and that it can be applied to all kinds of engines. He says that marine engines may be propelled with one-fourth of the fuel, fewer boilers, and at greater speed.

Mr. Frost has informed us that he applied for an American patent but was refused, because the Patent Office Examiner did not believe in the discovery. This property, *stame*, is also the one which the Rumford Society, of Cambridge College, in the name of Prof. Horsford, reported against, which report was published on page 24, Vol. 5, Scientific American. The *stame* is produced by heating it apart from the water in the boiler, by making it pass through hollow grate bars in the furnace or else through a coiled pipe, and taking it thence to the cylinder. Will not some of our readers try the experiment and give us the results,—collateral testimony to Mr. Frost, or otherwise. What is the reason that Mr. Collin's does not employ this discovery, when he owns the patent? And what is the reason that the eminent men spoken of have been perfectly silent about this discovery? If it is true, if they are satisfied of this, it is the greatest discovery of the age. Is it not wrong, then, to keep silent. Some of our readers, we believe, will soon set the matter right with the public.

Business in the Patent Office.

We have received a great number of letters lately enquiring "how far behind is the Patent Office with examinations?" We have to say that it is behind at least five months with some classes of cases. The business is not so far foward as it was this time last year. There are other classes which are not over one or two months behind. We regret exceedingly that the Patent Office should be so far behind. It should never be over one month at the farthest. When applications for patents are made, the minds of the applicants are always unsettled until they hear what has been done with their cases. There are many who, in a pecuniary point of view, suffer great loss by delay in the office. For example: there are some things which at once would command a sale, and the buyer is as much interested as the seller, but owing to no patent having been issued, the goods, articles, or whatever they may be, will not and cannot be put into the market on the fair and candid terms of being new and useful improvements. We would like, and so would all inventors, and the Patent Office Bureau also, if there was a proper force in the office to keep the business written up to within a few weeks of the date of applications. A great many cannot account for the backwardness of examinations now, when so much of the old business was exterminated before the Commissioner made his first Report.

There have been some very curious and singular movements in Washington and in this city, lately, about the Commissioner and other parties. Many of our readers will have read accounts of the same in the daily papers. As we keep ourselves free from all entangling alliances, we do not know what has been done behind the scenes. Our policy is open, because we believe that private party cliques and coteries do great mischief. Honesty is the best policy.

Back Numbers and Volumes.

Notwithstanding the vast quantity of each number of the Scientific American which it has been our yearly custom to reserve for binding, we have not a single number left of either Vol. 1, 2, or 3, and but about 20 different numbers of Vol. 4.

Of volume 5, we have yet about 50 complete sets bound, which may be had at the office, for $2,75 each, and about 100 sets in sheets, which can be forwarded by mail, price $2 per set.

New subscribers can be furnished with the first half of the present, if they desire it, which will render their volume complete at the end of the year, and worthy a good binding.

The first three volumes of the Scientific American cannot be purchased of those who are fortunate enough to possess them, for less than $5 per copy, while the contents does not compare favorable with what the last volume is, or what the present volume will be. The paper upon which the Scientific American is printed this year, is made expressly for this journal, and the increased difference in expense for the same quantity over the quality used on all previous volumes, amounts to over $1200 per annum.

For the information of new subscribers, we would say that every Volume of the Scientific American is accompanied with an index of contents, besides a complete index of all the patents which have been issued during the volume, thereby rendering the work a complete repertory of American inventions.

Depilatory Powders.

A correspondent informs us that Fontaine's depilatory powder was used by him and found to be most effectual in removing the hair very soon, and it did not grow again for four months —but what was singular in this application, no after application of it had any effect upon the roots of the hair. He says he "has used various powders for this purpose, but none are as effectual as represented by the dealers in them." We must say that we deprecate the use of such things entirely. There may be a few who would, no doubt, be the better of the use of such materials, such as those who are related to the "woolly horse," but the great majority have no earthly necessity for such things.

The Largest Edition Yet.

The present number of the Scientific American commences the last half of the 6th volume. It is 5½ years since the Scientific American was first commenced, the subscription list for the first volume not exceeding 12 or 1,400. The edition for this week exceeds 20,000 copies, being a larger edition than we have ever before published at a single issue.

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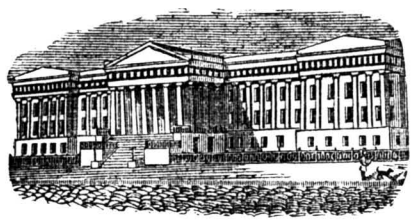

☞Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.

FOR THE WEEK ENDING MARCH 11, 1851.

To Luther Briggs, Jr., of Braintree, Mass., for methodof adjusting the stroke of Trip-Hammers.

I claim the combination of a trip-hammer in which the hammer is raised by cams, not acting directly upon the hammer or the helve, or a projection from the same, commonly called the lifting leg, but by the intervention of a movable joint, so constructed as to grasp or clutch the lifting leg at any required height, the position of the same being governed by the regulator, which may be constructed in the form of an inclined plane, or any equivalent contrivance, for raising and depressing the joint, at the will of the operator; the whole being constructed to perform the peculiar services substantially in the manner herein set forth.

To H. D. Chapman, of Baltimore, Md, for improvement in machines for climbing poles.

I claim the combination of the grapling levers, with the sandals and handles, for the purpose of climbing telegraph poles, masts, &c., and holding the climber at any desired height, so as to give him use of his hands when at rest, as described.

To P. G. Gardiner, of New York, N. Y., for improvements in cast-iron Car Wheels.

I do not make any claim to the combination, self-considered, of wrought-iron tire, with a cast-iron body; or yet, full plate sides or for internal arms, in section, when cast solid with the side plates of a railroad car wheel, for such have all been known and used before, but I claim the precise manner in which I have constructed and put together the parts of my wheel, by which, thus formed, they are free of strain from shrinkage in cooling, and have semi-internal flanges, as described, to protect the wheel when in use against lateral strain, and are bolted together and combined with a wrought-iron tire, in the manner set forth.

To P. G. Gardiner, of New York, N. Y., for improvement in machinery for making tyres by continuous rolling.

I claim stopping the advancing movement of the movable towards the stationary roller, when the tyre shall have attained its proper section, by means of self-acting mechanism, acting and constructed substantially as herein described.

I claim the combination of belts, pulleys, cluthes, screws, and screw-wheels with the sway-bar and triggers, by which a self-acting, advancing and retrograding motion is given to the movable roller, each motion changing to the other, when caused so to do by the hand of the operator, but self-arrested and stopped by the set of the triggers, substantially as described.

To T. P. How, of Buffalo, N. Y., for improvement in connecting trucks with car-bodies.

I claim connecting the bodies of cars to the trucks by two bolts to each truck, working in the holes or mortises above described and represented, the whole being constructed and operating substantially as herein set forth.

To Nathaniel Potter, of Buffalo, N. Y., for improved use of slides in Bee Hives.

I claim the manner of arranging the moth apartment with glass, paper, or other thin material overlaying the vent holes in the top of the box, said glass or paper having placed upon it old comb, or other suitable material, so as to be warmed by the bees in the boxes below, and ventilated as described, thus attracting the moths into said apartment, while at night they are entirely excluded from the bee boxes by means of the ventilating buttons, as described.

I also claim the arrangement by which the upper box or boxes are held in their places, while the one below is removed and another inserted in its place.

Also the arrangement at the rear and bottom of each box, by which the tin slide is removed; thus allowing a convenient opportunity for clearing the bottom of the bee box, as described.

To Hugh Guyer, of Albany, N. Y., for improved Window Curtain Fastening.

I claim the construction of rock pulleys for window shades, by fixing the pulley over which the cord of the shade roller runs upon a stem, having a plate sliding on the front outer face of the rack-box, attached to a thin plate or fin, passing threugh a slot in said face, extending the length of the box, the said pin projecting upwards, and terminating in a point, which acts as a pall against ratchet teeth made in the bottom of said box, or else the said pin projecting downward, and having a cross pin through it, acting against ratchet teeth in the upper and inner side of said box, the said stem and plate, in addition to the sliding motion along the box, having an oscillating motion on the upper or lower edge of the plate, by means of which the upward pressure of the cord on the pulley holds the pall or pin against the ratchet teeth, the downward pressure of the hand carries the pall or pin out of the line of the teeth, and permits the pulley to be moved upwards when required, substantially as set porth.

To J. W. Fowle, of Boston, Mass. for improvements in Steam Drilling Machines.

I claim the combination of a direct action steam drill, in which both engine and drill are mounted on a frame, which slides in a swinging frame, capable of being adjusted in any required position with the apparatus, substantially as described, which is connected with and actuated by the cross-head of the engine for causing the sliding frame to move along the swinging frame towards the rock.

To R. D. Granger, of Albany, N. Y., for improvement in Air-tight Franklin Stoves.

I claim making the fire-box with closed plate in front and behind, with a grate surface at bottom, occupying about one-third of the space between the front and back stove plates, to constitute hot-air chambers, front and back, when such fire-box is combined with a sliding damper at bottom, substantially as and for the purpose specified.

I also claim, in combination with a fire chamber, constructed as above specified, and governed at bottom with a sliding damper, as specified, the open front with vertically sliding doors as described.

To Solon Jenkins, of West Cambridge, Mass., for improvement in securing daguerreotypes in monumental stones.

I claim the mode herein described of securing the portrait plate against injury, from moisture or otherwise, by means of the two glass plates, and the plate I and the back plate —the whole being arranged and combined substantially as herein set forth.

To James Greer & R. J. King, of Dayton, O., for improvement in Cooking Stoves.

We claim the combination of the diving flue, as described, with two other diving flues, the said flues occupying the whole breadth of the stove, with the exception of the space occupied by the fire doors, and the central reverting flue in the back.

We also claim the gravitating damper, operated as described, that is to say by the rod with its curved eye, and the pendant lever with its band and catch, the said damper being located upon the division plate, between the back diving flues and the central back reverting flue.

To John Ruck, of New York, N. Y., for improvement in pianoforte action.

I claim, first, hanging the hammer shank on a hinge or joint, at a distance from its end, and effecting its communication with the fly-lever or jack, by means of a lever which is hung on a fulcrum at a distance from either end, and is connected at one end by a hinged or jointed link with the end of the hammer shank, in such a manner that when the fly-lever is raised by the key, the end of the hammer shank is drawn down, and the hammer thrown up to the string, or by any other means substantially the same.

Second, the universal repeating spring attached to the lever or butt, upon which is formed the projection or its equivalent, through which the fly lever communicates with the hammer, for the purpose of raising it and working it upon the end of the fly lever, in the manner substantially as and for the purpose set forth. This I claim without reference to the precise form of the projection or of the spring herein shown, as various modifications may be made for producing the same effect.

Third, attaching the check wire to a hanging or hinged butt, operated upon by the key, in the manner substantially as described, so as to produce the same effect as if attached to the key, for the purpose of allowing the key to be easily taken out.

Fourth, securing or placing the regulating screw for controlling or regulating the escapement of the fly lever in an arm or its equivalent, upon the lever on which the fly lever acts, by which the action of the said screw upon the fly lever is more gradual and easy, and the jarring or concussion produced, when the screw is stationary, is avoided.

To Martin & Thos. R. Way, of Paintersville, Ohio, for improvement in machines for turning, boring, &c.

We claim the tool and block holder herein described, consisting of two upright frames, capable of movement towards each other, and of being clamped at a greater or less distance apart, as may be required, to adapt them to holding blocks of different sizes and tools of different lengths or forms, each frame being provided with upright parallel guides carrying adjustable jaws for holding boring or turning tools at different heights and angles, and to aid in holding blocks of irregular forms, these frames being mounted upon a carriage capable of being turned or moved, right or left, so as to hold the tool, or present the substance to be bored, in the required positions, substantially as set forth.

To A. A. Wilder, of Detroit, Mich., for improvement in Copying Presses.

I claim the use of a lever handle, having its fulcrum on the pressing plate attached to the opposite plate, by links working in the manner describee in combination with the adjusting arrangements, for the purposes expressed, and operating together as shown, or in any other substantially similar manner.

[See engraving in No. 9, Vol. 6, Sci. Am.]

To G. F. Woolston, of Orangeburg, S. C., for improvement in the teeth of Saws.

I claim the invention of teeth in circular saw blades, of the form and for the purposes above set forth.

RE-ISSUES.

To Wm. W. Hubbell, of Philadelphia, Pa., for improvement in Fire-Arms. Originally patented July 18, 1844.

I claim, first, the combination of the two independently adjustable braces extending one on each side of the breech chamber containing the charge that is being fired, to regulate and accurately determine the joint between the breech and barrel, substantially as described.

Second, I claim the breech opening and closing on an axis which is parallel to the main barrel and secured and regulated by the parts, substantially as described. [See engraving on page 108 Vol. 4, Sci. Am.]

To Edward Lynch, of Brooklyn, N. Y,, for improvement in Evaporators and Condensers. Originally patented July 1848.

I claim the partition within the tank, for the purpose of dividing the water of the evaporator from that of the condenser, in the manner and for the purposes substantially as herein set forth.

DISCLAIMER.

To A. J. Williams, of Utica, N. Y., for improvement in machines for making wire heddles.

The subscriber further represents that he is the sole and exclusive owner of the said letters patent, and of the right, interest, and property therein and thereby secured, and although he did not intend in or by the specifications and drawings upon and in reference to which said letters patent were issued (and of which copies are annexed to, and form a part of said letters patent) to represent or claim that he was the original or first inventor of the wheel, collar, or flange, with a sliding tooth and pulley and treddle, or other device, and he insists that said specifications and drawings do not, when rightly understood, represent or claim that he was such inventor; and he also insists that said letters patent do not, when rightly understood, assume to confer on him, any right as the supposed, assumed, or alleged inventor thereof, or of any part thereof; yet, in order to guard against any mistake or misconstruction in these respects the subscriber states, first, that he did not mean to assert, claim, or represent in and by said specifications and drawings, that he was the original or first inventor of the wheel mentioned as wheel figure 8, in said specification and drawings.

Second, nor did he mean to assert, claim, or represent in and by said specifications and drawings, that he was the inventor of the collar or flange, with a sliding tooth, which are partially represented on the drawing, figure 1, near Q, and also partially represented on the drawing, figure 2, at that end of the cylinder where the receiving and discharging hook rod shows the hook, and near B.

Third, nor did he mean to assert, claim, or represent, in and by said specifications or drawings, that he was the inventor of the cord, pulley, or treddle, partially represented on the drawing, figure 1, which cord, as shown, extends from said pulley near letter C to said treddle.

Fourth, nor did he design or intend, by said specifications or drawing, to claim, assert, or represent that his invention would make a heddle with a slack twist, in the half or part thereof which is towards the end where the wire is doubled.

And the subscriber says, that if said specifications and drawings import or mean, that any or either of the aforesaid things was or were invented by him, or that his invention, as claimed by him, would make a heddle with any such slack twist, as aforesaid, the same was and were, by and through inadvertence, accident, and mistake, not being so designed or intended by him, and he hereby fully disclaims the several matters and things aforesaid, numbered above, and each and every part thereof, under and pursuant to the seventh section of the Act of Congress, entitled "an Act in addition to the Act to promote the progress of science and useful arts," approved March 3, 1837, and pursuant to the law in such cases made and provided; insisting, however, as he does, that the same are not, nor is any part thereof claimed in and by said specifications and drawings, or either of them, or embraced in said letters patent; this disclaimer being made for greater caution and to guard against misconstruction and mistake in regard to said matters.

[This is one of the most extensive disclaimers that has come within our notice. The papers originally were surely made out with a great disregard to correctness. No papers should be more carefully drawn up than those belonging to patents. and none require greater discrimination.

Errata---Patent Claims.

To J. W. Nystrom, of Philadelphia, Pa., for improvement in Calculating Machines.

Second claim,—I claim the trigonometric curves of the inner scale, in combination with the graduated arms and logarithmic curves of the outer scale, the curves being laid out substantially in the manner herein described.

To Enoch Burt, of Manchester, Conn., for improvement in Fancy Check Power Looms.

To J. M. C. Armsby, of Worcester, Mass., for improvement in Corn Shellers.

U. S. PATENT OFFICE, March 14, 1851.

MESSRS. MUNN & Co.—Enclosed you will receive the second claim of J. W. Nystrom, for his Calculating Machine; also title of Burt's patent, and Armsby's patent. Very respectfully, THOS. EWBANK, Com.

[The above is on official correction of patent claims published, which have appeared recently in our columns. See Burt's claims in full on page 196, No. 25, with engraving, also Armsby's on page 142, read Corn Sheller instead of Candlesticks.

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TO CORRESPONDENTS.

"F. T., of N. Y."—The expense varies according to the magnitude of the case. Average price for preparing an application $20.

"H. S. T., of S. C."—We are now in correspondence with parties in regard to the matters contained in yours of the 24th ultimo; as soon as we receive a definite reply, you will hear from us.

"A. A., of Md."—We do not find sufficient novelty in your arrangement to justify an application for a patent. We have been familiar with the principles for several years. It is the common cylindrical pump, of which there are any quantity now in use, the only difference being in the mechanical construction, which is not patentable. We advise you not to spend time or money in making an application.

"M. F. G., of Iowa."—The papers relating to your improved gate will be attended to as soon as possible. We have not seen the party owning the patent referred to since the receipt of your letter. Whenever we do we will call his attention to your suggestion. The patent reports we cannot supply.

"J. D., of Ill."—We believe that 18 numbers of Tredgold's work on the Steam Engine have been published. An indefinite number are yet to come. Price 75 cents per number. The first six have been sent.

"O. P. S., of Ohio."—We should think (judging from your description) that the machinery you use possesses novelty of a patentable nature and we advise you to send on a model without delay. We cannot advise an appeal from the Commissioner's decision, not having full knowledge of the case. We should prefer to run the risk of getting a patent on the machinery.

"W. W. K., of Ky."—The person who furnished the receipt on page 89, did not give his name to us in full, we are therefore unable to comply with your request of the 3rd inst. $1 received.

"W. P. E., of Washington."—We are much obliged for your attention to our request of the 5th inst. If there are any charges please name them by letter, and they will be attended to.

"J. W. O. of Ohio."—You can furnish the couplings without invalidating your claims to all who wish them. $10 received.

"H. W. D., of N. C."—It is evident that much of your heat is wasted. Have you no return flue? Your boiler should only give 6½ horse power. Perhaps you may work it too hard. It should only burn ¾ of a cord in twelve hours, and give out 6½ horse power. The tubes will cost about $40 we think. If you communicate with Walworth, Nason & Guild, No. 79 John st., N. Y., you will get the minutest information. Metal spring packing is the best for the piston. As good a form of piston as any is Barton's, see Tredgold on the Steam Engine, or Herbert's work on Mechanics.

"S. L., of S. C. College."—We have sent your letter to a lathe builder here, Mr. Stewart, requesting him to reply to it, as we had not the information you required.

"A. V. G., of Wisconsin."—We have no great confidence in your plans; before we can give an opinion, however, we shall require you to explain the "certain known principles upon which the water is raised, if you wish our advice. There is no good work upon painting such as you would like.

"W. D. W., of Mich.—We have re-entered your name as a subscriber up to the end of of this volume. There must have been a screw loose somewhere.

"A. C., of Miss."—There can be scarcely a doubt of the accuracy of your views. We have several times noticed the same phenomena, and referred to it some time last fall, while reviewing the meeting of the American Association held in New Haven.

"E. C., of N. C.,—German silver is found by fusing together 100 parts of copper, 60 of zinc, and 40 of nickel.

"R. E. J., of Iowa."—An alloy of bismuth, tin, and lead constitutes what is known as Newton's fusible metal.

"L. D, G., of N. J."—We expected to see you before this.

"A. H., of N. H."—We are obliged to you for the reference to Nicholson, we shall examine it. Your ring is new in that form, but the same principle of action is embraced in Bramah's Disc Cutter.

"W. C., of Canada."—We are obliged to pay 1½ cents per copy postage on all papers we send to Canada, which amount is added to the price of your subscription of course. You have all the papers to which you are entitled for 1 dollar, and if you expect the paper sent for 1 year, you should remit annually $3 instead of $2.

"H. E., of N. Y."—There is not patented a method for extinguishing fire by steam. Yours could not be patented.

"F. A. S., of Ct."—We could not answer your question, because we do not know the manner you propose to accomplish your object. The result is not patentable in such a machine, it is the mode of arriving at it.

"L. T., of ———."—We cannot answer your question in any way, because we do not see how it can be done. The object of the fly-wheel is to equalize the action of the piston, in other words, transmit with a uniform action, to other machinery the unequal action of the piston. It can perform no other office. Nothing can surpass the crank on the locomotive.

"C. C., of E. Port."—We have sent those numbers to Mr. DeWitt with an explanatory note. Thank you for the information.

"G. B., of Texas."—The best book for a millwright, with which we are acquainted, is Scott's, but there is not a single good work to which we can refer you for all the different kinds of wheels now employed. Scott's work is large, 2 Vols., and costs $24, but it is a good one.

Money received on account of Patent Office business, since March 12, 1851 :—

J. B., of Mass., $30, J. H., of L. I., $25; C. D. B., of Conn., $25; G. W., of Mass., $50; B. & M., of N. Y., $50; J. S. P., of N. Y., $250; J. D., of N. J., $5; R. F. B., of N. Y., $5; E. H. H., of Mass., $30, and J. O., of Conn, $20.

Specifications and drawings belonging to parties with the following initials, have been forwarded to the Patent Office within the past weeks :—

C. D. B., of Conn.; J. H., of L. I.; R. B. & Son, of O.; J. D., of N. J.; A. W. D., of N. Y.; S. T., of Conn.; J. O., of Conn.; E. H. H., of Mass.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and enclosing one dollar as fee for copying.

ADVERTISEMENTS.

Terms of Advertising :

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them at any price.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Branches of our Agency have been established in London, under the charge of Messrs. Barlow, Payne & Parken, celebrated Attornies, and Editors of the "Patent Journal;" also in Paris, France, under the charge of M. Gardissal, Editor of the "Brevet d'Invention." We flatter ourselves that the facilities we possess for securing patents in all countries where the right is recognized, are not equalled by any other American house. MUNN & CO.,
128 Fulton street, New York.

STEAM ENGINE FOR SALE—We have for sale a 12 horse-power Horizontal Engine, complete, with flue boiler, second-hand, newly re-fitted, in excellent condition, has not been used to injure it; solid cast iron frame, manufactured by the "Novelty Works," this city. Its original cost was $1,450, and will now be sold for $900 cash, the owner having no further use for it. Apply to MUNN & CO. 27tf

WILLIAM W. HUBBELL—Attorney and Counsellor at Law, and Solicitor in Equity, Philadelphia, Penn.

TO LUMBER DEALERS.—Law's Planer having undergone important alterations, is now perfected and in successful daily operation, facing and matching at the same time, and in both respects, in a style not to be surpassed. The common objection that machines are expensive in repairs, is not applicable to these new machines—they are simple, strong, and easily kept in order. It is confidently believed that when they are well known they will have a decided preference over any other machine or mode of planing. Planing of all kinds done at short notice, corner of Water and Jay sts., Brooklyn. Law's Stave Machine dresses and joints staves of all kinds, shapes, and widths, by once passing through. Rights or machines for sale by H. LAW, 216 Pearl street, or after 1st March, at 23 Park Row. 21 8

LEONARD'S MACHINERY DEPOT, 116 Pearl st., N. Y.—The subscriber has removed from 66 Beaver st. to the large store, 116 Pearl st., and is now prepared to offer a great variety of Machinists' Tools, viz., engines and hand lathes, iron planing and vertical drilling machines, cutting engines, slotting machines, universal chucks, &c. Carpenters' Tools—mortising and tennoning machines, wood planing machines, &c. Cotton Gins, hand and power, Carver Washburn & Co.'s Patent. Steam Engines and Boilers, from 5 to 100 horse power. Mill Gearing, wrought iron shafting and castings made to order. Particular attention paid to the packing, shipping, and insurance, when requested, of all machinery ordered through me. P. A. LEONARD.
15 3m

IRON FOUNDERS MATERIALS—viz., fine ground and Bolted Sea Coal, Charcoal, Lehigh, Soapstone and Black Lead Facings of approved quality. Iron and brass founders' superior Moulding Sand, Fire Clay, Fire Sand, and Kaolin; also best Fire Bricks, plain and arch shaped, for cupolas &c.; all packed in hogsheads, barrels or boxes for exportation, by G. O, ROBERTSON, 4 Liberty Place, near the Post Office, N. Y. 22 3m*

MATAPAN MACHINE WORKS—Corner of Second and A sts., South Boston. The undersigned have recently enlarged their business and are now prepared to offer a great variety of Machinists' Tools, viz., Engine and Hand Lathes, iron Planing and Vertical Drilling Machines, Cutting Engines, Slotting Machines, and Universal Chucks; also Mill Gearing and Wrought Iron Shafting made to order.
22 12* GEO. HEPWORTH & SON.

MACHINES FOR CUTTING SHINGLES AND STAVES.—The undersigned is the owner of the following States of Wood's Improved Shingle Machine, Patented Jan. 8th, 1850, viz., Maine, New Hampshire, Vermont, Delaware, Maryland, Virginia, North and South Carolina, Georgia, Alabama, Florida, Arkansas, New Mexico, California, Oregon, District of Columbia, and one half of Connecticut. The above territory is for sale with or without the machines. No machine ever patented can do the same amount of work in so perfect a manner. Address CHARLES WATERMAN, West Meriden, Ct.
24 4*

NOTICE TO MACHINISTS.—Wanted, immediately, a competent hand as foreman of a machine shop, where the principal work done is building stationary steam engines. An industrious man with steady habits, who can give testimonials of his ability to do, and direct work in such a shop, will be sure of employment at generous prices, if application be made soon. Reference—Wm. Kemble, 79 West st., N. Y. Address E. W. HUDNUTT & CO., Geneseo, Livingston Co. N. Y. ☞ Wanted, 2 or 3 good machinists. 24 4*

PATENT DREDGE BOAT.—The subscriber having obtained a patent for improvements on the Dredge Boat, offers to sell rights to build and to use his Patent Dredge Boat in any part of the United States; the excavating apparatus consists of twenty scoops, preceded by plows receiving great pressure, and are capable of raising eight or ten cubic yards of mud or gravel per minute; the scooping apparatus may be fitted on an old steamboat or other vessel, for the purpose of removing bars or other obstructions to navigation. A working model may be seen by calling on the subscriber. JAMES CALLAGHAN,
20 10* No. 64 Spruce st., New Bedford, Mass.

PATENT BREAD CUTTER—The subscriber will sell rights for this very valuable article, for a single State or for all the States except Vermont, Maine, Massachusetts, Rhode Island, Connecticut, New York, Missouri, Illinois, and Iowa, on reasonable terms. The Cutter will be wanted in almost every family, and will sell readily at a large profit to the manufacturer. Personal application or by letter, post paid, to the subscriber, at Berlin, Conn., will receive prompt attention. FRANKLIN ROYS. 25 4*

SASH AND BLIND MACHINE—Patented by Jesse Leavens, Springfield, Mass. The machine planes, molds, mortises, bores, tennons, copes, franks, cuts off, rips up the stuff, planes the blinds, shades, and sets out the sash The machine is 4 by 5 feet, weighs 800 lbs., requires two horse-power to drive it, and cost $300 cash—extra charge for the right to use. Shop, town, county, and State rights for sale. Orders from abroad will be promptly attended to by addressing JESSE LEAVENS, Palmer Depot, Mass.
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27 eow6*

WANTED—A Practical Machinist who can command from $500 to $3,000, to become interested as partner in a Foundry and Machine business which is already established. None but such as can furnish undoubted testimonials for skill, energy, and character, need apply. For particulars address "D. J. M.," care of Munn & Co., N. Y. 27 2*

DICK'S GREAT POWER PRESS.—The public are hereby informed that the Matteawan Company, having entered into an arrangement with the Patentee for the manufacture of the so-called Dick's Anti-Friction Press, are now prepared to execute orders for the following, to which this power is applicable, viz.—Boiler Punches, Boiler Plate Shears, Saw Gummers, Rail Straighteners, Copying and Sealing Presses, Book and Paper Presses, Embossing Presses, Presses for Baling Cotton and Woollen Goods—Cotton, Hay, Tobacco, and Cider Presses; Flaxseed, Lard, and Sperm Oil Presses; Stump Extractors, &c. &c. The convenience and celerity with which this machine can be operated, is such that on an average, not more than one-fourth the time will be required to do the same work with the same force required by any other machine.
WILLIAM B. LEONARD, Agent,
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MACHINES FOR CUTTING SHINGLES. The extraordinary success of Wood's Patent Shingle Machine, under every circumstance where it has been tried, fully establishes its superiority over any other machine for the purpose ever yet offered to the public. It received the first premium at the last Fair of the American Institute—where its operation was witnessed by hundreds. A few State rights remain unsold. Patented January 8th, 1850,—13 years more to run. Terms made easy to the purchaser. Address, (post-paid) JAMES D. JOHNSON, Redding Ridge, Conn., or Wm. WOOD, Westport, Conn.. All letters will be promptly attended to. 10tf

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SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., will have finished 2 Power Planers ready to ship by the 1st of Feb., that will plane 9 feet long, 31 inches wide, and 24 inches high, with angle feed; counter shaft, pullies, and hangers, splining and centre heads, with index plate, and weigh over 5,000 lbs.; also 2 power planers that will plane 5 feet long, 22 in. wide, and 20 in. high, with counter shaft, pullies, and hangers, and weigh 2,400 lbs.—These planers are 25 per cent. lower than any others built. Cuts can be had by addressing as above, post paid. 19tf

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THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low; also, several of smaller capacity, complete; also, several power planers, now finishing.—Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Conn. 18 10*

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Scientific Museum.

The Spanish Fly and the Cockroach.

Although the cockroaches abounded inconveniently at the Mauritius, it was not without pity that I saw them consigned, as they frequently were, to a living grave by a wicked looking insect much resembling a Spanish fly. It was impossible to witness his proceedings, combined with his glittering blue and green dres, without imagining the elfish demon of a pantomime leading an innocent victim to perpetual entombment in some haunted cavern. Let the cockroach be moving never so briskly across the wall, he has no sooner caught sight of the fatal insect—not a quarter of his size—than all energy leaves him, and he stands stupidly resigned. The fly then walks up to him, looks him hard in the face, and presently putting forth some apparatus which stands him in place of a finger and thumb, gently takes the cockroach by the nose and leads him daintly along for a foot or two. Leaving him there, he commences a thorough examination of the neighborhood, beating the ground up and down like a well-trained setter, and, not finding what he wants, returns to the cockroach and leads him on a little further, when the same process is gone through, sometimes for hours, till the whole wall has been examined Chinks there are in plenty, but they do not suit him; he has taken the measure of his victim's bulk, and means to lodge him commodiously. Presently a suitable hole is found, and the fly, moving backward, gently pulls the cockroach after him into his last home. What horrors are perpetrated in this dark recess cannot be more than surmised. The object undoubtedly is to engage him as a wet-nurse. No doubt the poor cockroach is bored in some part not vital, and eggs laid in him; a purpose, indeed, for which his succulent motherly frame seems peculiarly adapted. And not improbably, during this vicarious incubation, he is supplied with food, until the young, of whom he is pregnant, being hatched, commence, in return for his services, to "gnaw his bowels, their repast." It is in vain that during the scene above described you urge the cockroach to seek safety in flight. The poke of a stick is disregarded; he seems dead to all hints; nay, move him to another part of the wall, he waits there with the same stolid indifference the return of his tormentor. Probably a sly thrust is given him in the first meeting of noses, or some "leprous distilment" dropped in his ear; for he has entirely the air of being hocussed.—[Voyage to the Mauritius.

Destruction of Ships by Spontaneous Combustion.

Capt. Bates, of ship Nanantum, from Baltimore for California, which was destroyed by fire from spontaneous combustion of her cargo of coal, took passage at the Falkland Islands in the Scotch ship Hermagoon, Capt. M'Kenzie, for Valparaiso, with coal, but when twelve days out, west of Cape Horn, this ship also took fire from spontaneous combustion, and every exertion to smoother it proved unavailing. They took to their boats and were picked up soon after by the British ship Symmetry, Capt. John Thompson, of Liverpool, for Acapulco, with coal. Capt. T. would not deviate from his course to land Capt. Bates and wife, or the other ship's company; but Dec. 15, in latitude 47 S., longitude 79 W., they fell in with ship Fanchon, of Newburyport, from Baltimore for San Francisco, with coal, which also took fire and was destroyed, as before reported, making the third ship burnt by that means within a few months, while Capt. B. and wife were on board.

Capt. Thompson, of the Symmetry, had the cruelty to demand and receive of Capt. Bates, for the thirteen days he and his wife were on board his ship thirty pounds sterling, taking an advantage unexampled in meanness, of persons who had suffered a double shipwreck, and had no means of redressing themselves. Capt. Bates and wife were at Payta, Jan. 26th, on their way to San Francisco.

A Sofa Made of Coal.

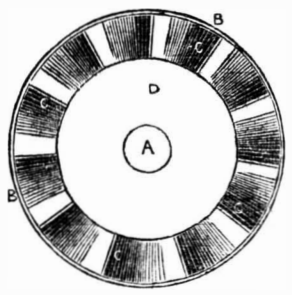
The Fife Advertiser, Scotland, says, speaking of the West Wemyss Coal-field:—"Mr. Williamson is making a sofa wholly composed of coal: it is nine feet long with three compartments or divisions, and is sufficient to contain seven people sitting on it. The front standards are beautifully carved, displaying three mongrel animals, which forcibly remind the spectator of the richly-carved figures that appear so frequently in Dr. Layard's remains of ancient Babylon. This rare geological curiosity was ordered by General Wemyss, and it is highly probable that it will appear at the Great Exhibition, as it ordered to be finished previous to that time.

For the Scientific American.

Hydraulics.

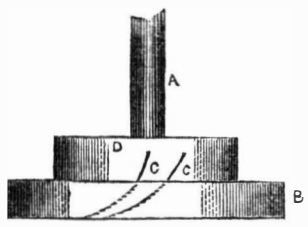
(Continued from page 208.)

Fig. 35.



There are a great variety of Re-action Water Moters in use, one claiming one form, and another claiming a different form or arrangement, as being the best. By some it is said the horizontal shaft is just as good as the vertical, while another asserts the perpendicular is the only one adapted to the nature of the action of the wheel. One claims the centre vent as the best mode of employing the water wheels, another sees nothing but what is objectionable in thus using the water. The facts of superiority and inferiority of one and the other form have yet to be collected. Fair and full trials have not yet been conducted upon such a scale as will warrant dogmatic conclusions. Many patents have been granted in our country on such kinds of water wheels, and to tell the essential difference between them and the principle involved in the patents, the most acute lawyers would find their learning sadly out of joint, even if they were to require an explanation from the Bureau at Washington. Almost every form of this kind of wheel may now be used as public property by any one who may choose to do so. A few, showing

Fig. 36.



some variety of form, will be presented, one of which is shown by the top view, fig. 37, and its side section, fig. 38. A is the shaft, B is the side circular band or flange of the buckets; D is the cylindrical block on which the buckets, C, are cast. The whole of these part smay be cast in one piece—this is the cheapest way to do it. The wheel is placed in a water-tight case and a shield above, like that of the French Turbine, may conduct the water to the buckets. The lower gudgeon of the shaft, A, should be set in an oil box fixed in a step below. The upper gudgeon should also be set to run in a bearing box above, and on the top should be a bevel wheel to gear into any pinion upon a cross shaft, or if it is desired to use the wheel for grinding, the lower stone may be secured to a block or bed, and held stationary near the top of the shaft, (the shaft passing through it), while the upper stone may be secured on the top of the shaft, to move with the speed of the wheel. For farmers who have small streams on their farms, such a wheel is very cheap, either for grinding or for working other machines. Instead of a bevel wheel on the top, a large pulley with a groove in it may be used on top of the shaft, and a band from it, may drive various machines. A wheel of three feet in diameter, large enough, with plenty of water to drive a threshing mill, circular saw, and other machinery, should not cost over $100.

New Jersey Zinc and Franklinite.

In Sussex County, N. J., midway between Sparta and Hamburg, there are immense quantities of zinc ore and franklinite. The zinc ore is and is mixed with franklinite, (an oxide of red iron) and some manganese; itself is a volatile metal when heated up to a certain temperature, but neither of the other two are. To reduce the zinc from the ore, the flux is either charcoal, coke, or the purest anthracite, and the result is a metal, obtained of chemical purity, well adapted, as chemists now generally understand, for the most delicate chemical tests. The white is also a pure substance of zinc and oxygen.

The operations of the company owning the mines, are at present confined to the manufacture of white and brown paints from the zinc ore. For this purpose they have erected furnace buildings, mills, machine shops, &c., at Newark, where they own a valuable property of forty acres, between the Passaic river and the Morris Canal. About fifty tons of ore are mined and hauled to the feeder of the Morris Canal daily. This is transported by the canal to the works in Newark. The present furnaces and machinery are equal to the manufacture of about 2,000 tons each of the white and brown paint annually. White zinc paint has heretofore been imported from France, where it is manufactured of zinc metal, and sold at 13½ cents per lb. Its superiority in color and durability over white lead, becoming in fact whiter by age, is proved by the high price it bears. The New Jersey company can manufacture this paint cheaper than white lead can be made, and thus monopolize the sale. The brown paint is much used for painting outside work, iron, brick, &c. It possesses galvanic properties, and having a strong metallic basis, resists fire when put upon wood. The sale of this paint is only limited by the facilities of the company to produce it. It is made simply by crushing and grinding the zinc ore in oil. It has long been a desideratum among the scientific men of the world to find some mineral substance which would possess all the qualities of a superior paint, and yet be free from any ingredients which might have a tendency to impair the health of the workmen.

The franklinite which is in great abundance in New Jersey is, however, beginning to attract a great deal of attention. This ore of iron, makes excellent iron. It becomes magnetic by calcining, and is therefore a magnetic iron ore, in which state it can easily be separated from the zinc ore by revolving magnets, when a very pure metal is produced from the same by the ordinary methods.

New Discovery of Daguerreotype.

In our article, page 189, on Actinism, we stated that we had been informed that one of our artists had discovered a process of taking pictures, showing all the colors as well as the lights and shadows.

The discoverer is a Mr. L.L. Hill, of Westkill, Greene Co., N. Y. In a recent article in the Photographic Art Journal, he says "the discovery is due to some chemical compound, a nondescript to me, though I have made the science of chemistry my study for years. That it is a new substance, or combination of substances, I am positive; and this is all I know concerning it. It is simply and easily produced, but not by any law stated in the large number of chemical works with which I am familiar. Doubtless however a correct and thorough analysis will determine its nature."

He had 40 specimens of pictures taken by his discovery at the date of his letter to the Journal spoken of. Three of these are thus described:

"1. A view, containing a red house, green grass and foilage, the wood color of the trees, several cows of different shades of red and brindle, colored garments on a clothes-line, blue sky and the faint blue of the atmosphere; intervening between the camera and the distant mountains, very delicately spread over the picture as if by the hand of a fairy artist.

2 A sunset scene, in which the play of colors upon the clouds is impressed with a truthfulness and gorgeous beauty which I cannot describe.

3. Several portraits, in which I have the true complexion of the skin, the rosy cheeks and lips, blue and hazel eyes, auburn, brown, and sandy hair, and every color of the drapery. Changeable silk is given in all its fine blendings of colors, and delicate richness of hues. I not only get red, blue, orange, violet, &c., but their various tints. The whole impression, including the lights and shades, is far more brilliant, round, and mellow than the most superb daguerrean image I have ever seen."

He adds:

"I have a most exquisite type of my little girl, (one year old,) taken in the act of *crying*, the plate not having been exposed a full second. At the same time, my light required fifteen seconds for a daguerreotype. This picture has caught the expression perfectly both of the eye and whole face. On one cheek is seen a bright tear drop, and the color showing through it much deeper than the surrounding parts; which latter, I suppose, is owing to the refractive action of the fluid."

The discovery is named Hilliotype. The only difficulty now experienced is in taking yellow colors. We hope this discovery is all that it is stated to be.

LITERARY NOTICES.

American Railway Guide, for March, is issued and for sale by Curran Dinsmore, the publisher, 138 Fulton street. It embraces all the information a person can desire about the different routes, starting time of trains, etc. It is a valuable work, and should be in the possession of every one intending to travel. We have found it exceedingly useful, as oftimes the patience of ticket masters is so completely exhausted by questions that the "reply courteous," is forgotten. This Guide saves the mortification of a sharp shot from an insolent ticket clerk. Price 12 1-2 cents.

Stanfield Hall, an Historical Romance, by I. P. Smith, Esq., author of "The Jesuit," "Robin Goodfellow," etc; published by W. F. Burgess, No. 22 Ann street, at 50 cts. per volume, pp. 224 each. This is said to be one of the most powerfully written romances since the days of Sir Walter Scott. It possesses high dramatic interest, and embraces the exciting period of English history during the reign of Henry VIII. It is a work of no ordinary brilliancy and stamps the author as a man of genius.

We have received from Messrs. Dewitt & Davenport, Agents, Tribune Buildings, No. 34 Shakspeare's Dramatic Works; published by Messrs. Phillips, Sampson & Co., Boston, Mass.; it contains "Pericles, Prince of Tyre," embellished with a beautiful engraving of "Thasia." This number closes the sixth volume. Price 25 cents per number.

"The U. S. Railroad Guide and Steamboat Journal," March number. This comprehensive and useful guide to travellers, is published every month, revised and corrected, by G. R. Holbrook & Co., 114 Nassau st. For sale by Dexter & Bro., Ann st.

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